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PANASONIC AG-520B OPERATING INSTRUCTIONS MANUAL

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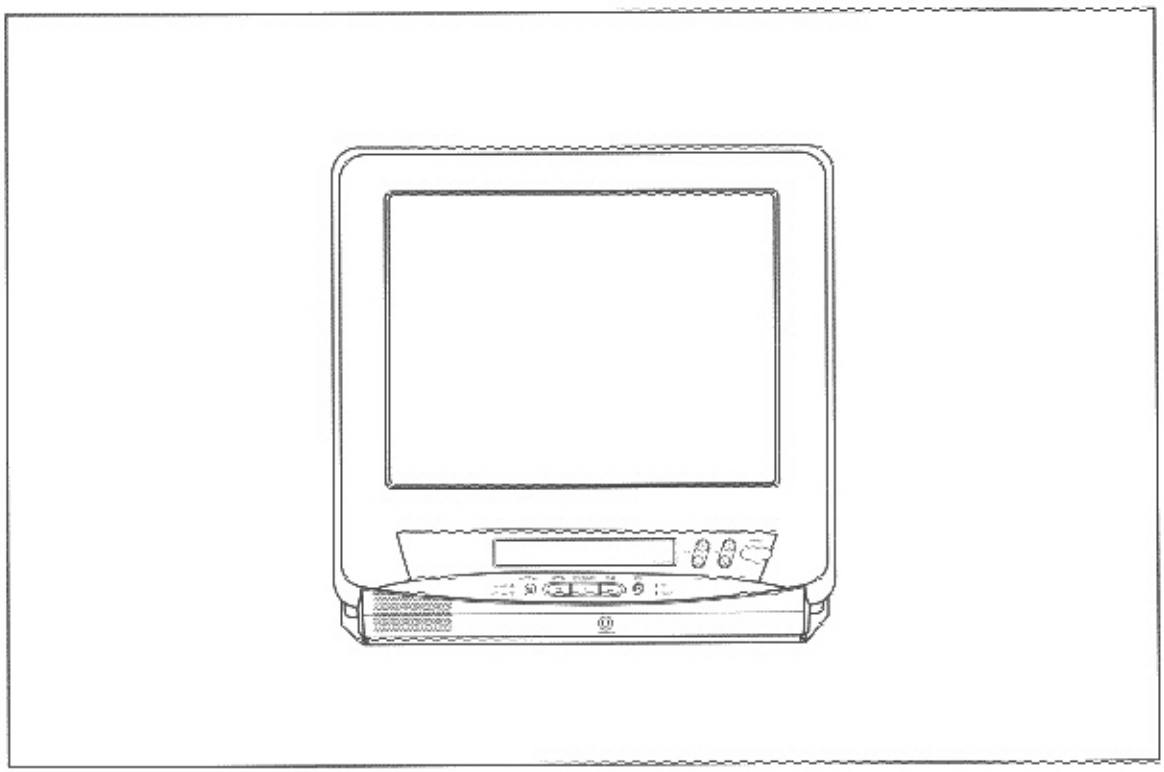
Professional/Industrial Video VHS

PRO LINE

AG- 520 B



Monitor/Recorder

Before attempting to connect, operate or adjust this product, please read these instructions completely.

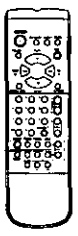
VQTS3185 (A)

Accessories

Accessories Packed with your Monitor/Recorder

These accessories are provided to help you use or set up your Monitor/Recorder.

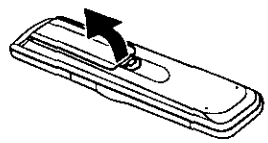
1 Wireless Remote Control and 2 "AA" batteries (VSQS1431)



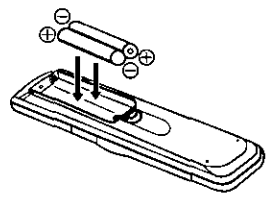
Load the Batteries as Follows:

Wireless remote control

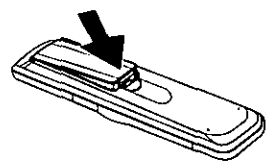
1 Lift off the lid after pressing in and up on the latch with your thumb nail or other narrow object.



2 Install two batteries as indicated inside the Battery Compartment.



3 Fit the lid's hinge piece into the indent on the case, and snap lid into place.



Battery replacement caution

- Do not mix old and new batteries. (Also never mix alkaline batteries with manganese batteries.)

Purchase Information

We are pleased to introduce you to one of the most sophisticated products available today. Please take time to fill out the information requested on the right. The serial number is on the tag located on the back of your Monitor/Recorder. Be sure to retain this manual as your convenient Monitor/Recorder information source.

Date of Purchase _____

Dealer Purchased From _____

Dealer Address _____

Dealer Phone No. _____

Model No. AG-520B

Serial No. _____

Safety Precautions

Warning: To prevent fire or shock hazard, do not expose this equipment to rain or moisture.

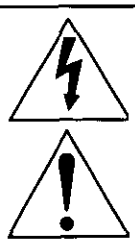
WARNING: Unauthorized recording of copyrighted television programs, films, video tapes and other materials may infringe on the rights of copyright owners and be contrary to copyright laws.

To prevent fire or shock hazard, and annoying interference, use the recommended accessories only.

This video recorder, equipped with the HQ system, is compatible with existing VHS equipment.

Only use those tapes with the VHS mark. It is recommended that only cassette tapes that have been tested and inspected for use in 2, 4, 6, and 8 hour VCR machines be used.

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK)
NO USER-SERVICEABLE PARTS INSIDE
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL



This symbol warns the user that uninsulated voltage within the unit may have sufficient magnitude to cause electric shock. Therefore, it is dangerous to make any kind of contact with any inside part of this unit.

This symbol alerts the user that important literature concerning the operation and maintenance of this unit has been included. Therefore, it should be read carefully in order to avoid any problems.

Features

- 181-CH TV/CATV Tuner
- Auto Clock Set
- Auto Operation Functions
- Auto Play with Repeat Function
- Closed Caption System
- Digital Auto Tracking
- Head Cleaner
- HQ (High Quality) System
- Large Graphic On Screen Display
- One Minute Skip
- On Screen Display Programming
- On Timer
- Quick Play Mechanism
- Rapid Tune
- Record Time Counter (Real Time)
- Special Effects Playback
  Rapid Search
  Intelligent Search
  Field-Still
  Field-Still Advance
  Double Fine Slow
- Tuner ON/OFF Selection
- Unattended (Timer) Playback with Repeat Function
- Unit Program
- Wireless Remote Control
- Zero Search

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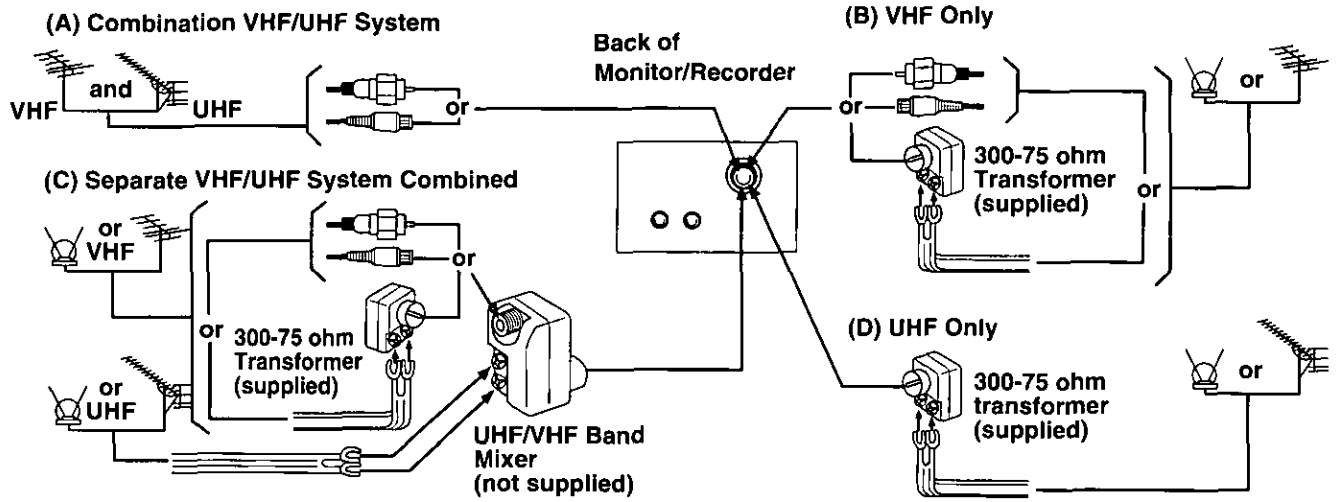
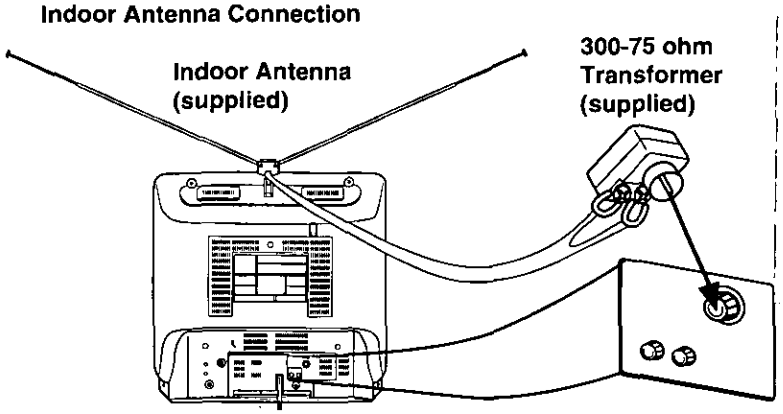
Getting Started

Basic Antenna Connection



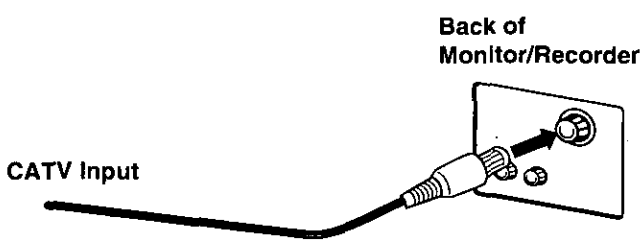
Indoor Antenna Connection



• How to install Antenna
Push the stem of the antenna into the antenna hole on the back of the set and connect its wires to the 300 ohm-75 ohm transformer. Then connect the transformer to the back of the Monitor/Recorder as shown above. Extend the antenna and adjust its length, direction, and angle for the clearest picture.

Cable Connections

(A) Without a Converter/Descrambler Box
Use this connection if your cable system connects directly to your Monitor/Recorder without a converter box.

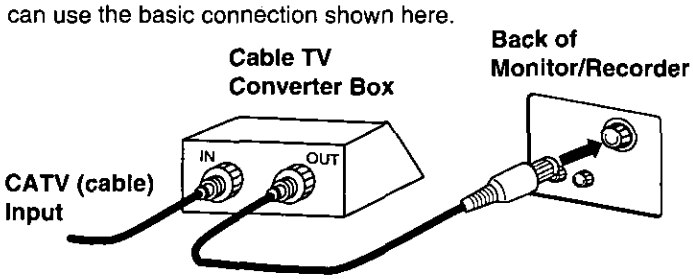


With this connection, you can:
1) use your Monitor/Recorder remote control to select channels.
2) program one or more unscrambled channels for timer recording.

NOTE:
- You can use the Monitor/Recorder Channel Up/Down keys to select the desired channel.
- You cannot record or view scrambled channels with this connection.

Note to CATV System Installer
This reminder is provided to call the CATV (Cable TV) System Installers attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

B) With a Converter/Descrambler Box
If your cable service supplies you with a converter box, you can use the basic connection shown here.



With this connection, you can record and view any channel including scrambled channels. However, channel selection must be made at the cable company converter box. This means that channels cannot be changed using the Monitor/Recorder remote control. Timer playback is limited to one channel at a time, and you cannot view another channel other than the one you are recording.

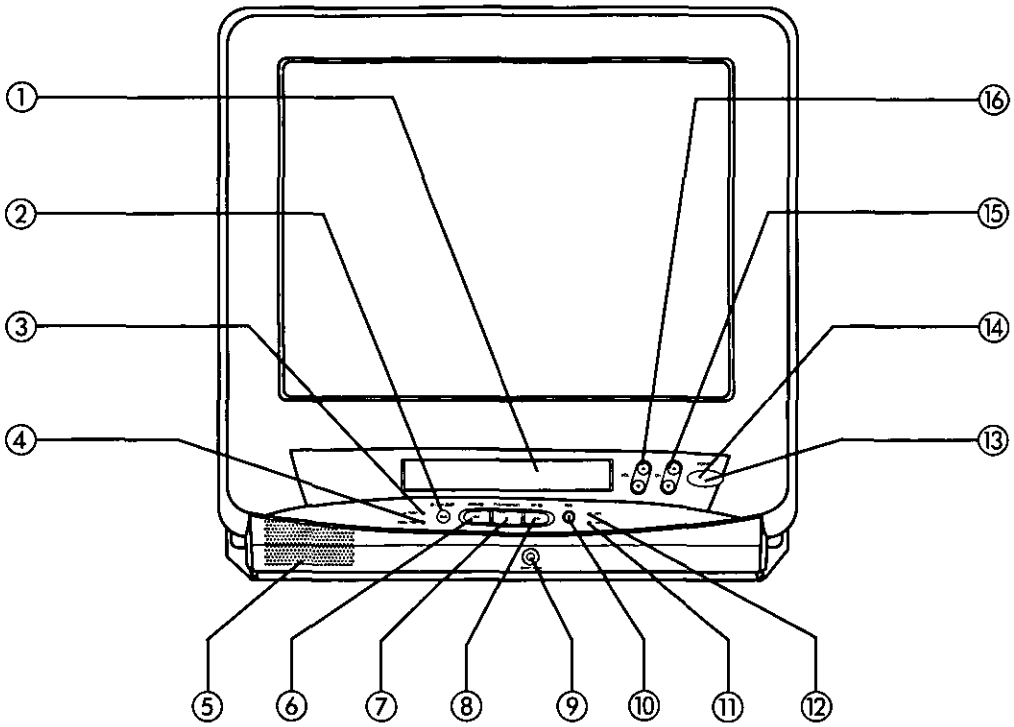
To Record and View a Scrambled/Unscrambled Channel
1. Set the Monitor/Recorder channel selector to the output channel of the cable converter box (e.g. CH3).
2. Select the channel to be recorded at the cable converter box.

Note: Refer to pages 8 and 9 for instructions on setting tuner to the cable TV mode.

FCC WARNING: Any unauthorized changes or modifications to this equipment would void the user's authority to operate.

Description of Controls

Front



① **Cassette Compartment**
Where the video cassette is inserted.

② **Stop/Eject Button**
To stop the tape. To remove a cassette in the stop mode.

③ **On Timer Indicator**
This indicator lights when the On Timer is set.

④ **Program Timer Indicator**
This indicator lights when the Monitor/Recorder is set for unattended (timer) playback.
It flashes when a Timer Playback has been set, but a tape has not been inserted or the clock is not set.

⑤ **Built-In Speaker**
Sound comes out here.

⑥ **Rewind/Search Button**
To rewind tapes. Also, during playback press this button to view the picture in rapid reverse.

⑦ **Play/Repeat Button**
To play back a tape. In SP or SLP playback, press this button once more for rapid search at twice the normal speed. Also, during playback press this button to set the Auto Repeat function.

⑧ **Fast Forward/Search Button**
To rapidly advance the tape. Also, during playback press this button to view a rapid forward search.

⑨ **Earphone Jack**
An optional earphone plugs in here to monitor the sound.

⑩ **Rec Button**
Press this button and Play button at the same time to begin a recording.

⑪ **Repeat Indicator**
This indicator lights when the repeat function is selected and playback is in progress.

⑫ **Record Indicator**
This indicator lights during recording.

⑬ **Wireless Remote Sensor**
Receives the signal from the wireless remote control.

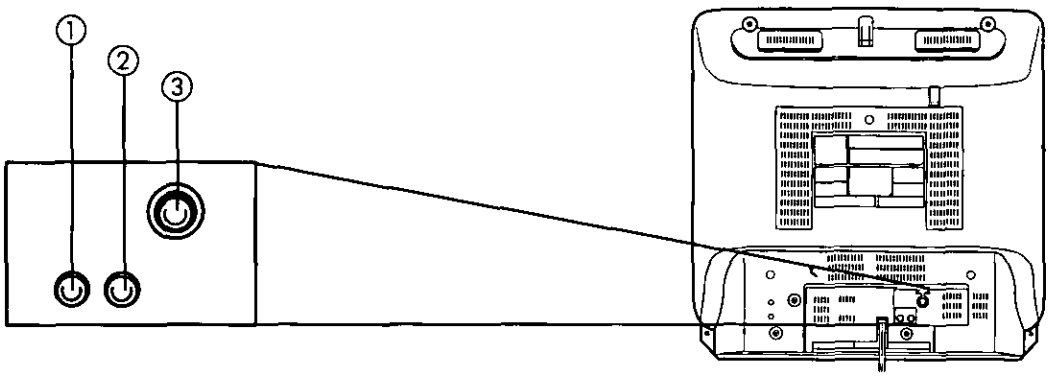
⑭ **Power Button**
To turn the monitor on and off.

⑮ **Channel Up/Down Keys**
Used to select the desired Monitor/Recorder tuner channel. Can also be used to clear or reset items in a displayed program.
Tracking Control
Use these keys during playback if the image is partially obscured by bands of noise.
V-Lock Control
Use these keys to lock out vertical jitter in SP or SLP Still mode.

⑯ **Volume Up/Down Buttons**
Press either the Volume Up or Down button to change the sound level from the built-in speaker.

Description of Controls (continued)

Rear



① **Video Input Connector**
For video input connection from another VCR.

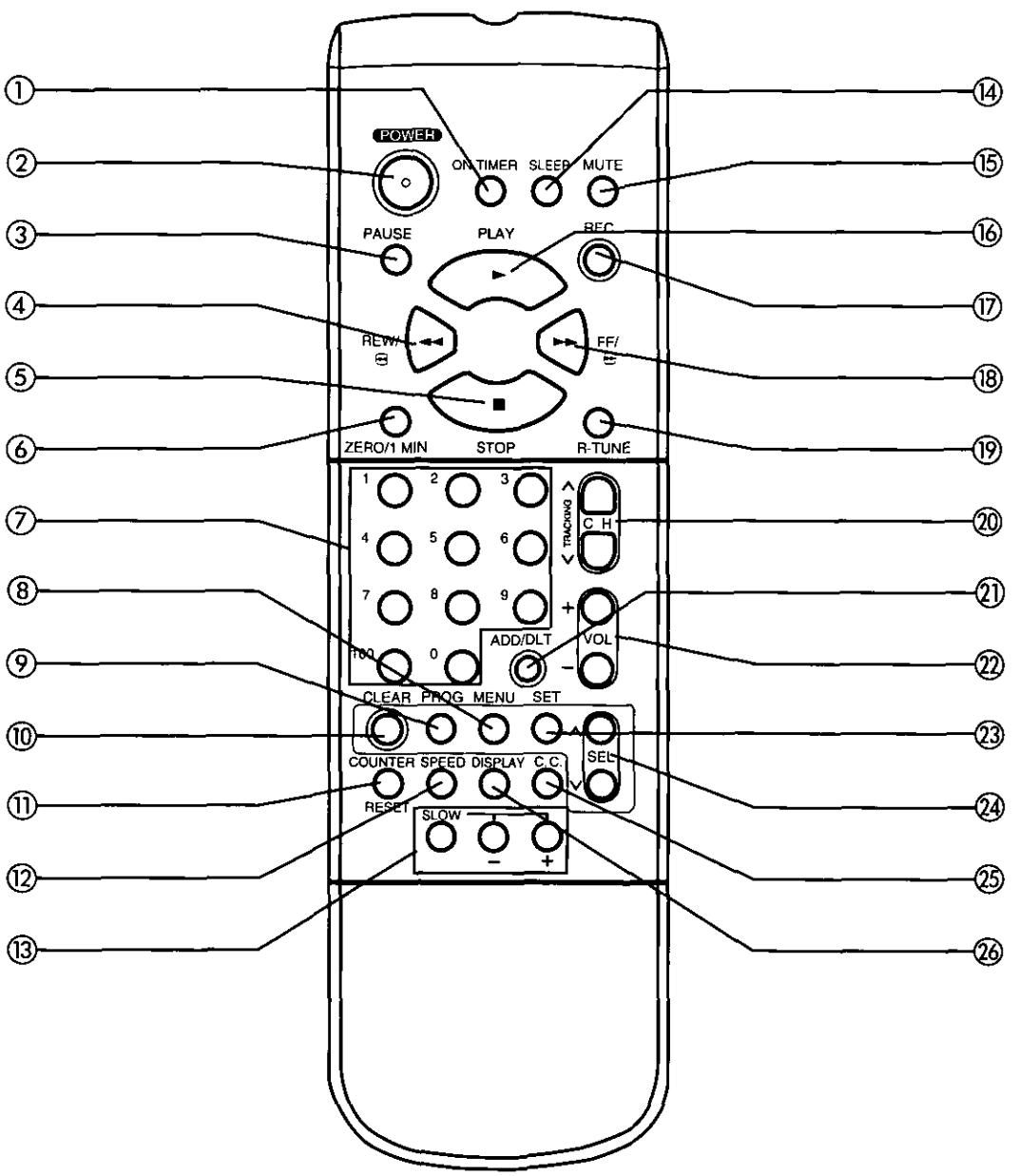
② **Audio Input Connector**
For connection from a portable video camera, another VCR or the output connector of another audio source.

③ **VHF/UHF Antenna Input Terminal**
In from the Antenna or Cable.

Wireless Remote Control

Most of the Monitor/Recorder functions are conveniently controlled with your wireless remote control.

For battery replacement see the back cover.



Description of Controls (continued)

① On Timer Button
To set the On Timer.

② Power Button
To turn the monitor on and off.

③ Pause/Still Button
To temporarily stop the tape during recording or to view a still picture during playback.

④ Rewind/Search Button
To rewind tapes. Also, during playback press this button to view the picture in rapid reverse.

⑤ Stop Button
To stop the tape.

⑥ Zero Search/ 1 Minute Skip Button
In play mode, press this button to skip over 60 seconds of tape.
In Stop mode, press this button to search for the point the Time Counter was set to 0:00:00.

⑦ Numbered Keys
(0, 1, 2, 3, 4, 5, 6, 7, 8 and 9)
Used to select desired Monitor/ Recorder tuner channels.
(100)
Press this button first when selecting channels 100 through 125.

⑧ Menu Button
To select the MENU screen.

⑨ Prog Button
Used for Timer Playback and to display timer programs.

⑩ Clear Button
Press this button to clear the setting for the displayed program contents.
Press to move the cursor back for correction during Timer Programming and Clock Set.

⑪ Counter Reset Button
Resets the time counter when it is displayed.

⑫ Tape Speed Selector
(SP/LP/SLP)
Set this selector to the desired recording speed.

⑬ Slow Buttons
Slow Motion
Press the Slow button in playback for slow motion on tapes recorded in SP or SLP. The Up/Down buttons let you adjust the slow motion speed from about 1/5 to about 1/60 of normal speed.
Frame Advance
Press repeatedly or hold down to advance the picture frame-by-frame in still mode for tapes recorded in SP or SLP.

⑭ Sleep Timer Button
Each press of this button advances the automatic off timer by 30 minutes (maximum is 90 minutes).

⑮ Mute Button
To turn the sound off. Press again and the sound will return.

⑯ Play Button
To play back a tape.

⑰ Rec Button
Press to record.

⑱ Fast Forward/Search Button
To rapidly advance the tape. Also in playback press this button to do a rapid forward visual search.

⑲ Rapid Tune Button
To instantly select the last channel you were watching.

⑳ Channel Up/Down Keys
Used to select the desired Monitor/Recorder tuner channel. Can also be used to clear or reset items in a displayed program.
Tracking Control
Use these keys during playback if the image is partially obscured by bands of noise.
V-Lock Control
Use these keys to lock out vertical jitter in SP or SLP Still mode.

㉑ Add/Delete Button
Used to add or delete a channel from the current channel memory.

㉒ Volume Up/Down Buttons
Press either Volume Up or Down button to change the sound.

㉓ Set Button
To enter selections when setting the clock, setting up a Timer Playback etc.
To set items from on-screen displays.

㉔ Select Up/Down Buttons
To make selections when setting the clock, setting up a Timer Playback etc.
To select items from on-screen displays.

㉕ Closed Caption Button
To select the desired caption mode.

㉖ Display Button
Press this button to display or clear the time counter, time, function, tape speed, and channel number.

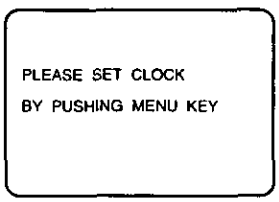
8 One Time Set Ups

Your Monitor/Recorder can be set to Tuner ON or Tuner OFF. When the Monitor/Recorder is first turned on, the tuner is set to off and a prompt to set the clock is displayed. By selecting "TUNER:ON" (see below), you can place channels in memory and/or use the Auto Clock Set feature (see next page).

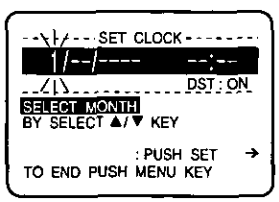
Set the Clock (Initial Power On)

Accurate clock time is a must for all types of timer Playback. Your Monitor/Recorder will accurately maintain its calendar up to Dec. 31, 2089, 11:59PM, once you have set the current day and time.

1 Press the Power button.
When the Monitor/Recorder is first turned on, the screen at right appears.



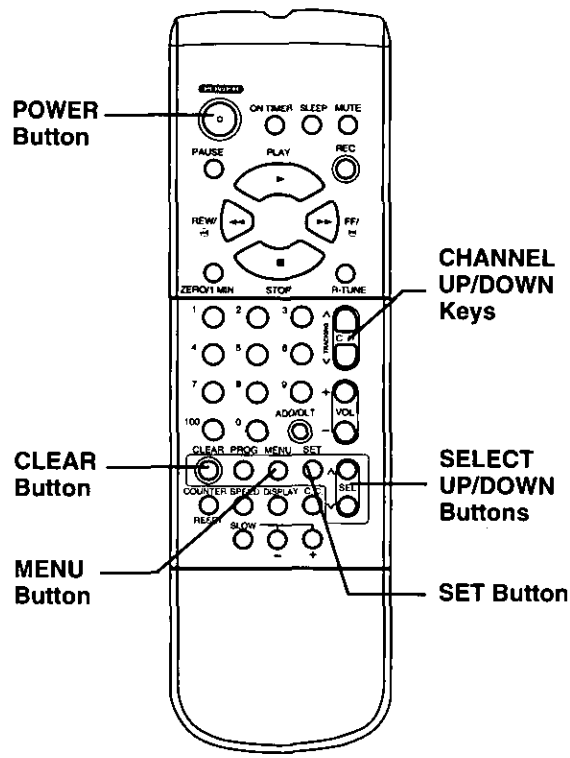
2 Press the Menu button to display the SET CLOCK screen.



3 Press the Select Up/Down and Set buttons to select and enter the month, date, year, time and D. S. T. (Daylight Saving Time).
- The day of week appears automatically.
- "DST:ON" automatically adjust for daylight saving time. (See page 25 for details.)

To make Corrections
Press the Set or Clear button repeatedly to move back or forward to the desired item.

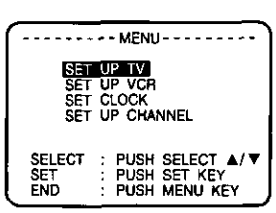
4 Press the Menu button twice to start the clock and exit this mode.



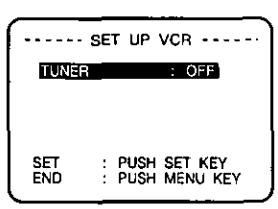
Select Tuner ON or OFF

When Tuner OFF is selected, your Monitor/Recorder is automatically in LINE mode. When Tuner ON is selected, Channel selection, Input selection, Channel Add/Delete, etc. is available.

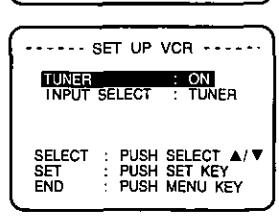
1 Press the Menu button to display the menu.



2 Press the Select Up/Down and Set buttons to select SET UP VCR from the menu.

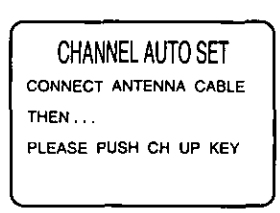


3 Press the Set button to select TUNER:ON or OFF.
- If you selected ON, go to the Set Up Channels section at right.

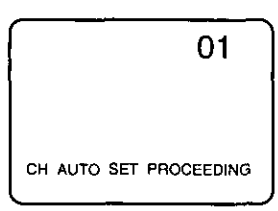


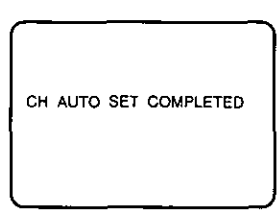
Set Up Channels (TUNER:ON only)

1 Press the Channel Up or Down button to display the CHANNEL AUTO SET guide screen.
- If you turn the Monitor/Recorder off after the tuner is set to ON, when you turn it back on, the CHANNEL AUTO SET screen appears automatically.



2 Press the Channel Up button to start Channel Auto Set.
- If the clock is not set, after channels have been placed in memory, the following on-screen displays appear in sequence: "PLEASE SET CLOCK BY PUSHING MENU KEY" If this screen appears, set the clock.





(See right column of page 9.)
- If you replace channels in memory and delete the memorized channel or add the new channel, see page 10.

Auto Clock Set (TUNER:ON only)

When TUNER:ON is selected, you can program your Monitor/Recorder for Auto Clock Set by entering your PBS channel. This feature is not available when Tuner OFF is selected.

- It takes about 10 seconds for the Monitor/Recorder to determine whether or not Auto Clock Set is available. Then, depending on your local broadcasting company, it takes from about 1 minute to 10 minutes to set the clock. If you would rather not wait, please press the Stop button and set the clock manually.

1 Press the Menu button to display the SET CLOCK screen.

```
------ SET CLOCK --------

AUTO SET
MANUAL SET

SELECT : PUSH SELECT ▲/▼
SET    : PUSH SET KEY
END    : PUSH MENU KEY
```

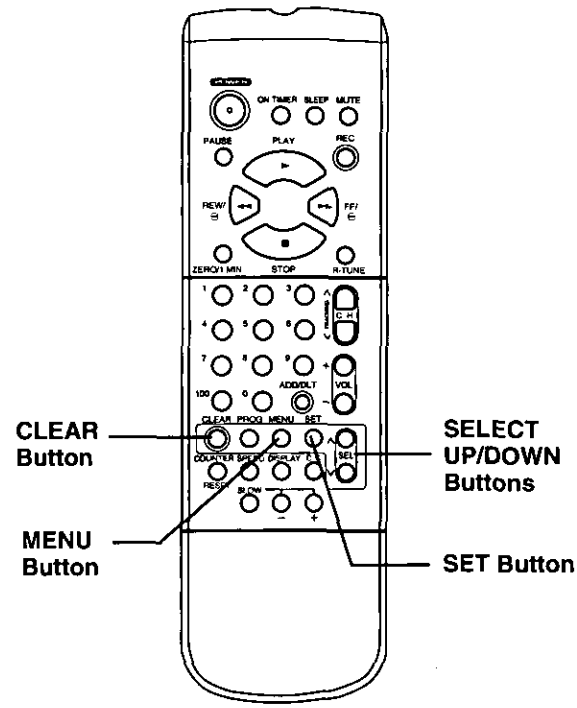
2 Press the Select Up/Down and Set buttons to first, select AUTO SET and then, to select YES if you are using a cable box, or NO if you are not.

- If you select MANUAL SET, go to step 2 of the "Manual Clock Set" section on this page.

```
ARE YOU USING
A CABLE BOX?

YES
NO

SELECT : PUSH SELECT ▲/▼
SET    : PUSH SET KEY
END    : PUSH MENU KEY
```



If You Selected YES in Step 2

Set your cable box to PBS station and then, press the Set button to go to the next step.

```
PLEASE SET YOUR CABLE
BOX TO YOUR LOCAL PBS
CHANNEL

NEXT : PUSH SET KEY
```

Now, press the Select Up/Down and Set buttons to select and enter the cable box output channel number. (the channel you tune the Monitor/Recorder order to watch cable stations.)

```
------ SET CLOCK --------

PLEASE ENTER CABLE BOX
OUTPUT CHANNEL

CH 12

SELECT : PUSH SELECT ▲/▼
SET    : PUSH SET KEY
END    : PUSH MENU KEY
```

If You Selected NO in Step 2

Press the Select Up/Down and Set buttons to select and enter your PBS channel number.

```
------ SET CLOCK --------

PLEASE ENTER YOUR LOCAL
PBS CHANNEL

CH 12

SELECT : PUSH SELECT ▲/▼
SET    : PUSH SET KEY
END    : PUSH MENU KEY
```

These on-screen displays will appear in sequence.

- AUTO CLOCK SET PROCEEDING
- AUTO CLOCK SET COMPLETED
- The lowest numbered channel

OR

This screen appears if:

- An entry error was made.
- Auto Clock Set is not available for the PBS channel selected. Try entering another PBS channel.

```
AUTO CLOCK SET
IS INCOMPLETE

PUSH SET TO SET CLOCK
```

If Auto Clock Set cannot be performed, please set the clock manually as described on next page.

Manual Clock Set

1 Press the Set button to display the SET CLOCK screen.

```
------ SET CLOCK --------
1/--/----   --:--
                DST:ON
SELECT MONTH
BY SELECT ▲/▼ KEY
          :PUSH SET →
TO END PUSH MENU KEY
```

2 Press the Select Up/Down and Set buttons to select and enter the month, date, year, time, and D.S.T. (Daylight Saving Time).

- The day of the week appears automatically.
- "DST:ON" automatically adjust for daylight saving time. (See page 25 for details.)

To Make Corrections

Press the Set or Clear button repeatedly while the SET CLOCK screen is displayed to move forward or backward over the display. Then enter the correct number and continue.

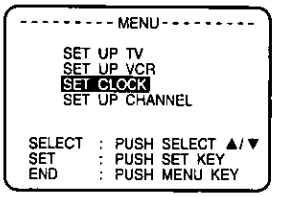
3 Press the Menu button twice to start the clock and exit this mode.

- If you reset the clock, see next page.

One Time Set Ups (continued)

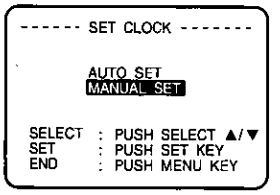
Set or Reset the Clock

1 Press the Menu button
to display the menu.

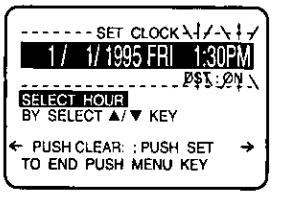


(Only when TUNER:ON is selected)

2 Press the Select UP/DOWN and Set buttons to select SET CLOCK from the menu and then, to select MANUAL SET.



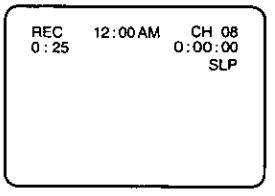
3 Press the Select UP/DOWN and Set buttons to set the date, time and DST (Daylight Saving Time).
- You may skip over already set items by pressing the Set or Clear button repeatedly.



4 Press the Menu button twice
to start the clock and exit this mode.

Time Confirmation

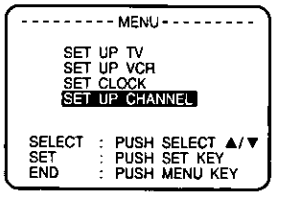
Press the Display button
to display the overlay shown below.
To remove the overlay, press the Display button once more.



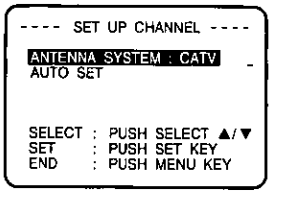
Replace Channels in Memory (TUNER:ON only)

For example, if you have cable installed, you can revise the channel memory by completing the following steps.

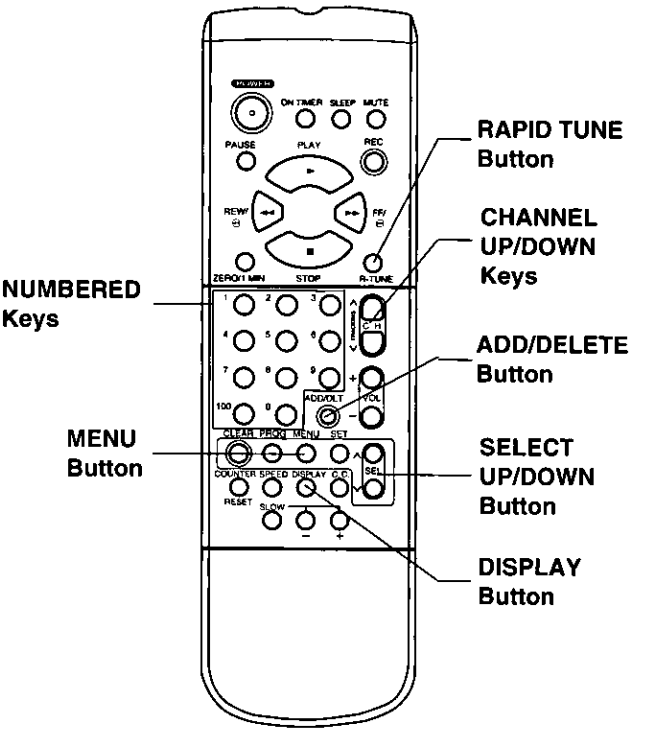
1 Press the Menu button
to display the menu.



2 Press the Select Up/Down and Set buttons to first, select the SET UP CHANNEL screen from the menu and then, to select your antenna system (TV or CATV).



3 Press the Select Up/Down and Set buttons
to select and start AUTO SET.



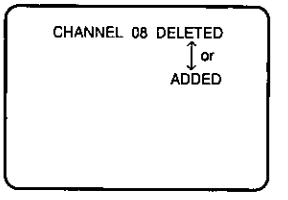
Add or Delete a Channel (TUNER:ON only)

1 Select the channel to be add or deleted
using the Channel Up/Down or the Numbered keys.

The Numbered keys select all channels regardless of whether they have a signal or not.

The Channel Up/Down Keys select only those channels which are in the Monitor/Recorder's channel memory.

2 Press the Add/Delete button.
The display shown below appears for a few seconds.
To select a deleted channel, use the Numbered keys on the remote control.



Using the 100 key (TUNER:ON only)

When selecting CATV channel numbers 100 to 125 with the numbered keys, first press the 100 key and then enter the remaining two digits.
For example, for 125 channel.
Press Numbered keys 100, 2, 5.

Rapid Tune (TUNER:ON only)

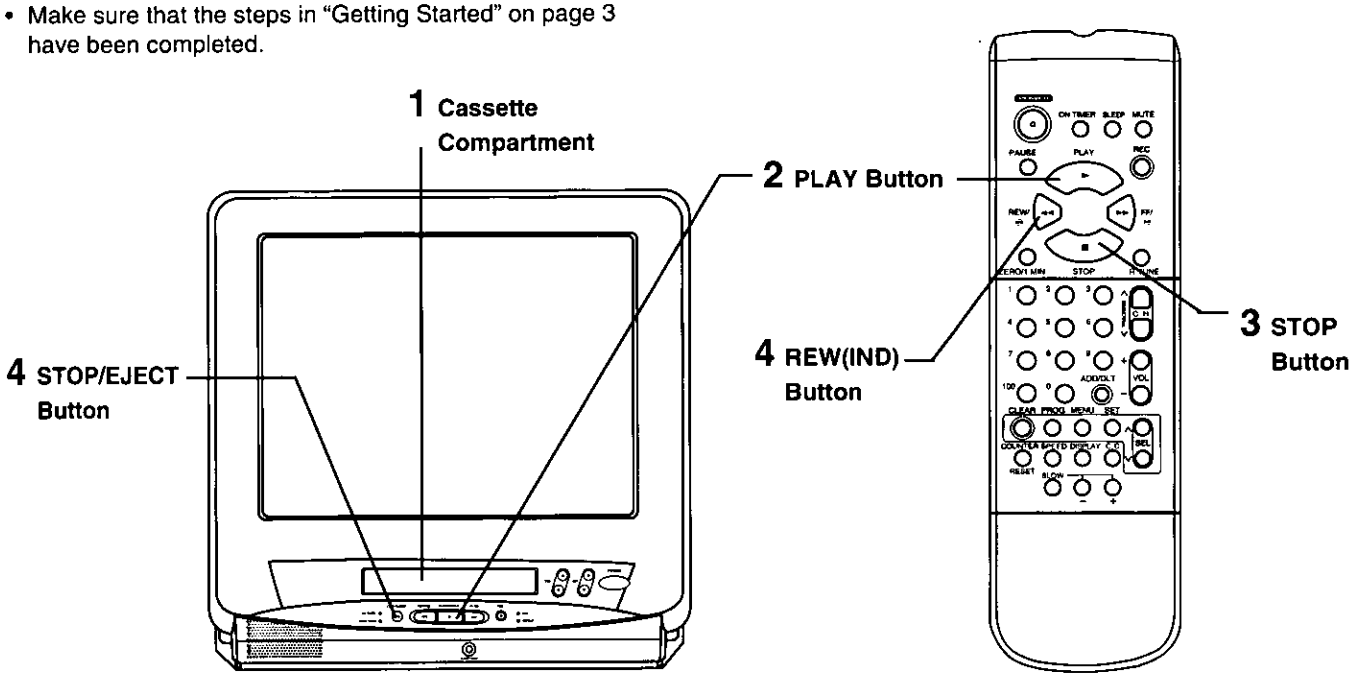
Press the Rapid Tune button to display the last channel you were watching.

Previous channel ⟷ Present channel
CH08 ⟷ CH10

To Play Video Tapes

Preparation:

- Make sure that the steps in "Getting Started" on page 3 have been completed.



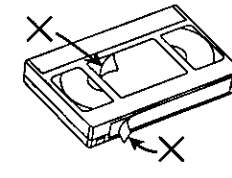
1 Insert a cassette.
The power will come on automatically. If the record tab (p.23) is removed, playback will start automatically. In this case, skip step 2.
If a cassette is already in the Monitor/Recorder, just press the Power button ON.

2 Press the Play button.
Playback starts.

3 Press the Stop button.
Playback stops.

4 Press the Rewind button if you want to rewind the tape. **And press the Stop/Eject button** on the Monitor/Recorder if you want to eject the tape.

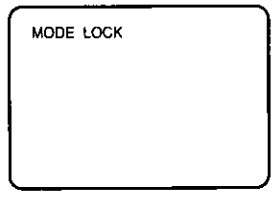
Caution:
Please inspect your cassette tape for any loose or peeling labels as it may become jammed in your unit.



Play Lock Mode

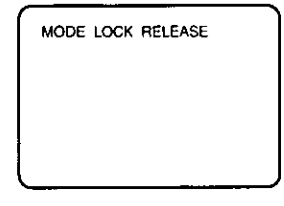
The Monitor/Recorder may be locked in Repeat Play mode so that all other function keys are inoperative.

Hold down the Play button about 7 seconds.
The Monitor/Recorder goes into Play Lock mode.



To Cancel the Play Lock Mode :

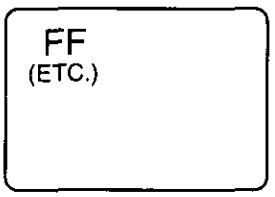
Hold down the Play button about 7 seconds again.
The Play Lock mode will be cancelled.



Note: When the Play Lock mode is selected,
(1) the Auto Repeat function is activated automatically. (See page 23.)
(2) the Sleep Timer and On Timer become nonfunctional. (See page 14.)

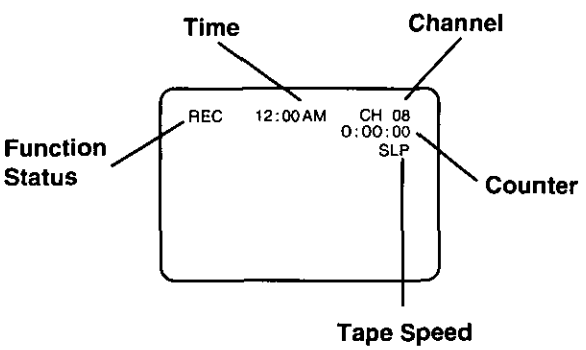
On Screen Indications

Whenever you press a function button (Stop, FF, etc.) or change channels, a 4 second OSD appears. The function name or channel number (if tuned) are displayed first as a large overlay for 2 seconds, then for 2 seconds as a smaller overlay. The display then disappears from the screen.



VCR Status and Clock Display

1 Press the Display button to display the overlay shown below.

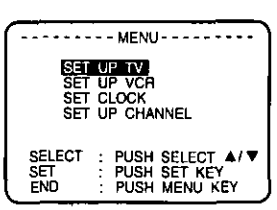


2 Press the Display button again to remove the overlay.

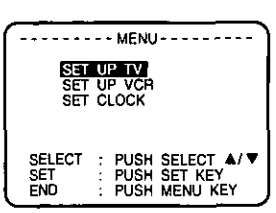
OSD Menu Screen

Press the Menu button on the remote control to display the Menu screen. Then, make your selection using the Select Up/Down buttons. After selecting a feature, please turn to the appropriate section in this manual and read the detailed instructions there.

TUNER: ON



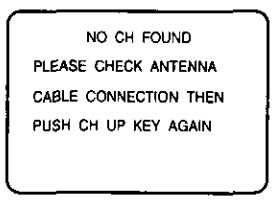
TUNER: OFF



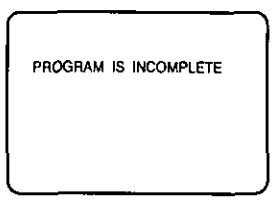
Warning and Instruction Display

These displays will alert you to a missed operation or provide further instructions.

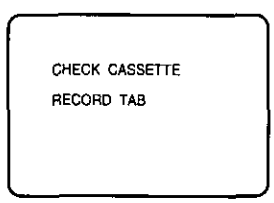
If no active channels are found for CHANNEL MEMORY...



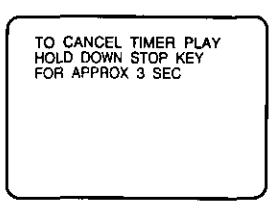
If a Timer Program was not completed before exiting the Program mode...



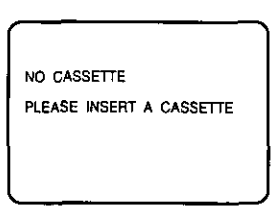
If you press the Rec button on the remote control or the Rec button and Play button on the Monitor/Recorder, and a cassette is inserted with no record tab...



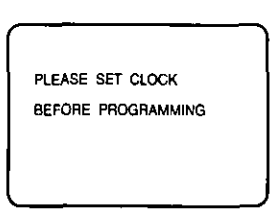
If you press the Stop button during a Timer Playback...



If you press the Play, FF, Rew, or Rec button on the remote control or if you press the Rec and Play, FF, Play, or Rew button on the Monitor/Recorder without a cassette inserted...



If you attempt to set or review a Timer Playback or set the On Timer and the Clock is not set...



Two minutes before a Timer Playback is about to begin...

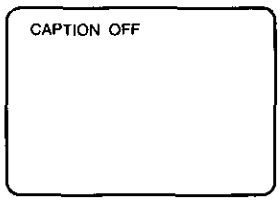
Closed Caption System

This feature not only allow the hearing-impaired to enjoy selected programs, but also makes valuable information from your TV stations available to you.

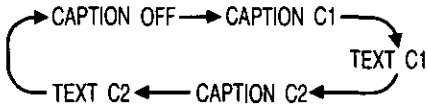
To Set the Closed Caption Mode

Press the C.C. (Closed Caption) button to select the desired caption mode (see below).

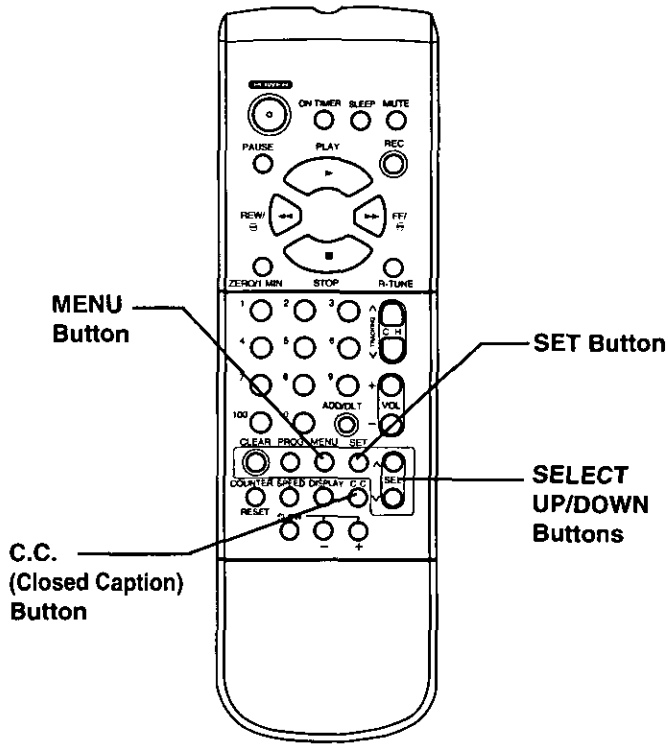
- The overlay will disappear in 5 seconds.



Each press of the C.C. button will change the caption mode as follows:



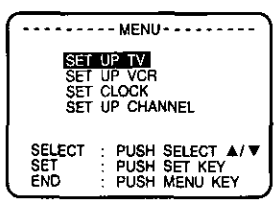
- You may also select the caption mode from the menu screen. Press the Menu button. Use the Select Up/Down and Set buttons and the Set button to select the SET UP TV and then the CAPTION. Finally choose the desired caption mode with the Set button.



To Set the Caption On Mute

This feature allows you to turn off the sound and, at the same time, display the closed caption narration. Perfect for when you need silence, but would like to continue enjoying the program.

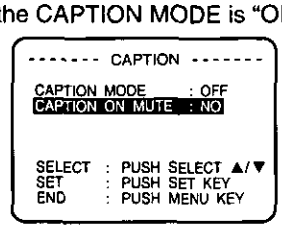
1 **Press the Menu button** to display the menu screen.



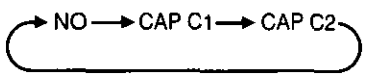
2 **Press the Select Up/Down and Set buttons** to first, select SET UP TV and then, to select the CAPTION screen.

3 **Press the Select Up/Down buttons** to select the CAPTION ON MUTE mode.

- Make sure the CAPTION MODE is "OFF."



4 **Press the Set button** to select the desired caption mode. Each press of the Set button will change the display as shown below:



Selecting the Proper Mode

Caption Mode: CAP C1 or C2

A narration of selected TV programs will be displayed on the screen. Check your TV program listings for CC (closed caption) broadcasts.

Caption Mode: TEXT C1 or C2

In this mode, the screen will be blocked out. Then, when the TV station broadcasts text such as program listings, special information, etc., it will appear in this space. This text block will remain on the screen until you cancel this mode.

Caption Mode: OFF

In this mode, narration will not appear on the screen even if a closed caption broadcast is received.

- The closed-caption or text signal may be broadcast over C1, C2, or both. Also, text contents can vary so you may wish to try different settings.

Recording and Playing Back a Closed Caption/Text Program

Your Monitor/Recorder will automatically record the Closed Caption/Text signal of applicable programs. To see the Closed Caption narration or text during playback, simply follow the steps above left.

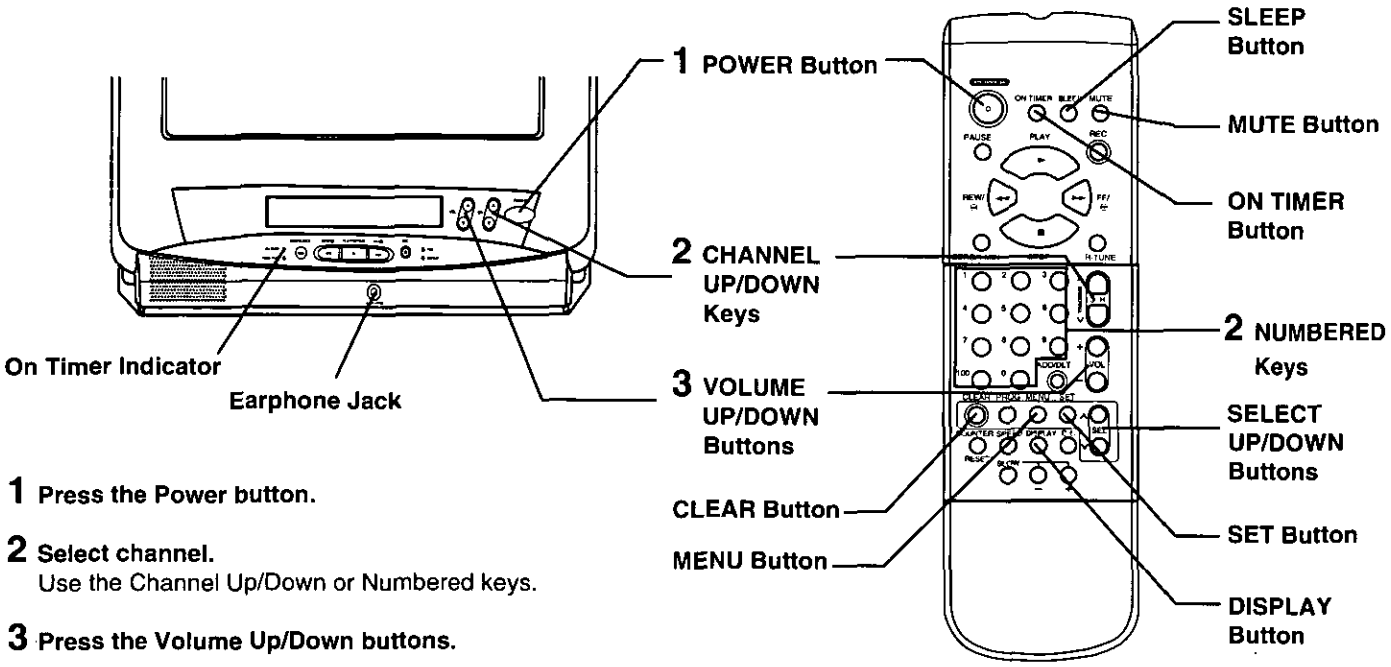
- When selecting prerecorded tapes for rental or purchase, look for the CC (closed caption) mark.

Note:

- This television receiver provides display of television closed captioning in accordance with §15.119 of the FCC rules.

To Watch TV

This section describes the basic operations for watching TV. Use the controls described on page 15 to adjust the picture as you desire while you are watching TV.



1 Press the Power button.

2 Select channel.
Use the Channel Up/Down or Numbered keys.

3 Press the Volume Up/Down buttons.

Audio Mute

To mute the sound temporarily, press the Mute button on the remote control. When you press it again, the volume will return to the previous level.

Earphone Jack

An optional earphone plugs in here to monitor the sound.

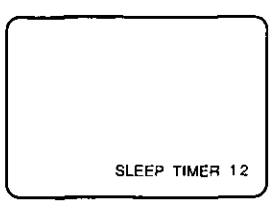
Sleep Timer

You can set the Sleep Timer to turn the Monitor/Recorder off automatically at the end of a preset time period (30, 60 or 90 minutes). Sleep Timer is not available during Play Lock Mode. (See page 11.) This feature is useful to turn the Monitor/Recorder off when watching a late program, otherwise you might doze off leaving the Monitor/Recorder on.

1 Press the Sleep button on the remote control. "SLEEP TIMER 30" will appear as an On Screen Display.

2 Press the Sleep button repeatedly to increase the time. The desired time (60 or 90 minutes) will appear on the screen.

- If you press the Display button with the SLEEP TIMER set, the remaining time will appear on-screen.



To cancel the Sleep Timer Function
Press the Sleep Timer button until "SLEEP TIMER 00" appears.

On Timer

You can set the On Timer to turn the Monitor/Recorder on automatically at a desired time. For example, the Monitor/Recorder can be set to wake you up in the morning or to remind you that a favorite program is about to start.

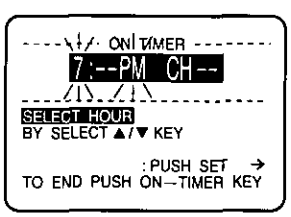
- Even if you set the On Timer, it will not be performed during Play Lock Mode. (See page 11.)

1 Press the On Timer button on the remote control. The On Timer display will appear as an On Screen Display.

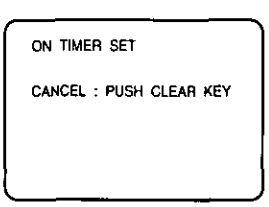
2 Press the Select Up/Down and Set buttons to set the ON time.

3 Press the Select Up/Down and Set buttons to set the desired channel except for Line input or press the Play button to select the Playback mode when power comes on.

- Press the Clear or Set button repeatedly to move back to an item you want to change.



4 Press the On Timer button to set the On Timer function. This screen will appear for about 5 seconds. The On Timer indicator lights on the front panel on the Monitor/Recorder.



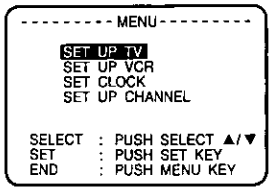
To cancel the On Timer Function
Press the Clear button while above screen is displayed. "ON TIMER END" will appear for about 5 seconds as an On Screen Display.

- 60 minutes after the Monitor/Recorder turns itself on, it will turn itself back off unless any remote or Monitor/Recorder is pressed.

To Watch TV (continued)

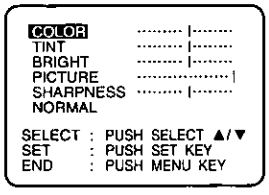
How to Adjust

1 Press the Menu button to display the Menu screen.



2 Press the Select Up/Down and Set buttons to first, select the SET UP TV and then, to select the VIDEO ADJUST.

3 Press the Select Up/Down and Set buttons to select and display the desired video adjust overlay. (See description at right.)



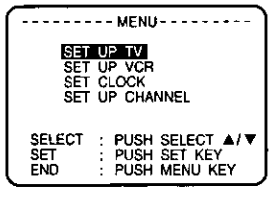
4 Press the Select Up/Down and Set buttons to adjust the control.

5 Press the Menu button twice to exit this mode.

- Adjustment scale and setting indicator number are displayed to assist you.
- If no button is pressed within 5 minutes, the video adjust overlay disappears.

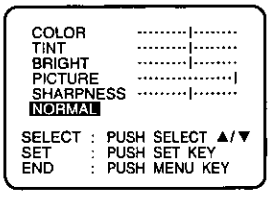
How to Reset

1 Press the Menu button to display the Menu screen.



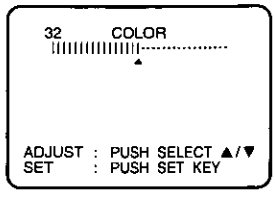
2 Press the Select Up/Down and Set buttons to first, select the SET UP TV and then, to select the VIDEO ADJUST.

3 Press the Select Up/Down and Set buttons to select and set the Normal.
All controls return to factory setting.

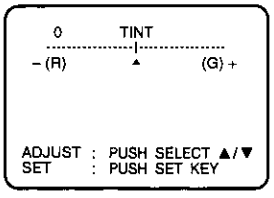


Video Adjust Menu

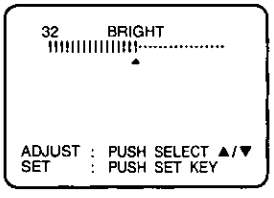
Color Control
This control lets you adjust the intensity of the colors.



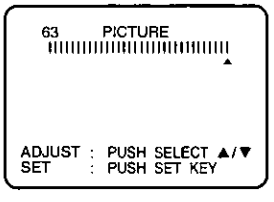
Tint Control
This control lets you adjust for most natural fleshtones.



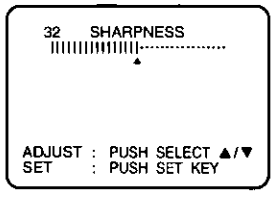
Bright Control
This control lets you adjust the brightness of the picture.



Picture Control
This control lets you adjust the intensity of the picture. It does this by adjusting contrast and color level at the same time and in the proper balance.

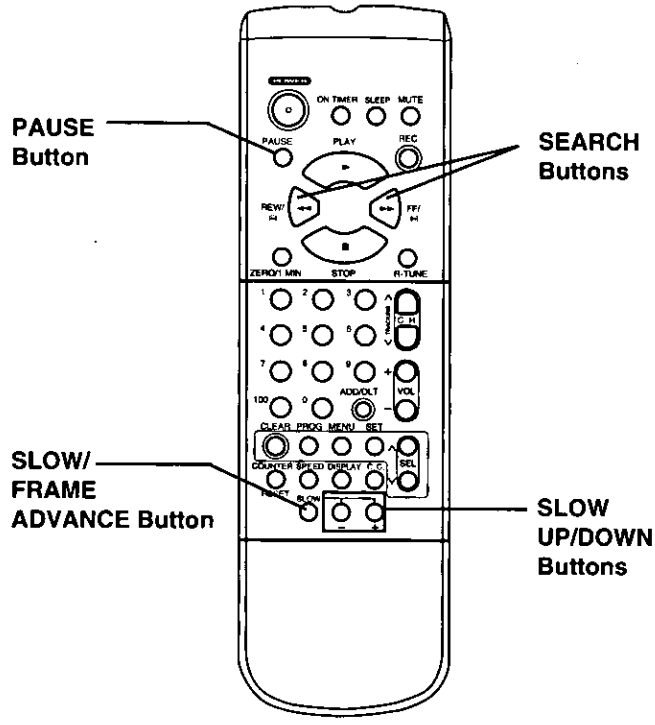


Sharpness Control
This control lets you adjust the sharpness of the picture.



Special Playback Features

After you are familiar with tape playback (see page 11, "To Play Video Tapes"), you are ready to enjoy the special playback features described on this page. These features work best in the SP or SLP mode. The sound will be muted.



To Rapidly Locate a Particular Segment

1 **Press the Search button during playback** on the remote control.

This starts a rapid forward or reverse visual search.

2 **Press the Search button again or the Play button** to return to playback.

Search speed in SP mode is about 9 times the normal speed. Search speed in SLP mode is about 27 times the normal speed.
During search playback, some noise bars will appear on the TV screen.

Intelligent Search

If the search is re-started within 5 seconds of a previous search, the search speed will be slowed down (SP mode: 5 times, SLP mode: 9 times). Select a function within 8 second to locate the particular segment. If a function is not selected within 8 seconds normal search speed with resume.

To Advance a Still Picture

1 **In still mode, press the Slow button** on the remote control.

Frame advance will only operate during still. The picture will slowly advance frame by frame while this button is held down.

2 **Press the Pause button or the Play button** to release.

To View a Still Picture (During Playback)

1 **Press the Pause button** on the remote control.

A freeze frame playback image appears. After the Monitor/ Recorder is in the still or slow mode for 3 minutes, it will stop automatically to protect the tape and video head.

2 **Press this button** again to release the still and continue playback.

To View a Slow Motion Picture

1 **During playback, press the Slow button** on the remote control.

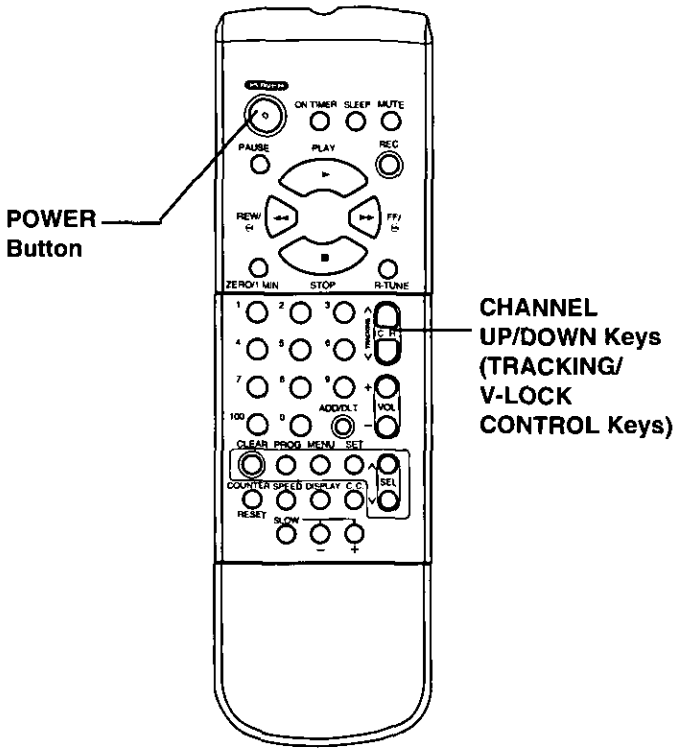
You can vary the tape speed of the slow motion by pressing the Slow Up/Down buttons on the remote control.

2 **Press the Play button** to release the slow mode.

Special Playback Features (continued)

Digital Auto Tracking

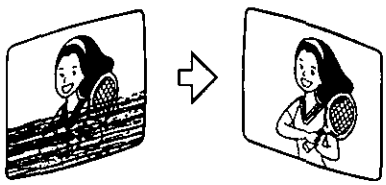
With Digital Auto Tracking there is usually no need for manual adjustments to minimize noise in playback for most tapes. Digital Auto Tracking continuously analyzes the signal to adjust for optimum picture quality for each recording. However, with some recordings you may get a better result using Manual Tracking.



Manual Tracking Control

Press the Channel Up/Down keys on your remote control or the Monitor/Recorder.
Manual Tracking adjustment is intended for use during playback and slow motion to minimize noise in the picture.

To return to Auto Tracking, eject and re-insert the tape.



V-Lock Control

Press the Channel Up/Down keys on your remote control or the Monitor/Recorder to **reduce jitter in still mode.** Once you have made this adjustment, you probably will not have to do it again unless you select still on a tape that was recorded on a different VCR.

Head Cleaner

A clean video head helps produce a clear picture. So we have equipped your Monitor/Recorder with a built-in, non chemical head cleaning system that helps prevent clogging of the video heads. Cleaning is performed each time you load or unload a video cassette.
Note: This feature is preventative only. If your video heads are seriously clogged, take your Monitor/Recorder to a qualified service technician.

Blank Tape Indication

If a blank section of tape is encountered in the play mode or the channel you select has no broadcast, the screen will change to a solid blue field. The screen will remain blue until a recorded signal is again detected or an active channel is selected.

Black Tube

This Monitor/Recorder uses a Black tube for better color reduction and picture contrast.

Auto Operation Functions

Auto Playback
When a tape is inserted the power comes on (Auto). If the record tab* is removed, playback begins (Auto).

Auto Rewind
After a tape reaches its end during playback, fast forward or manual record, the Monitor/Recorder will rewind it and go into Stop mode.

Rec Auto Eject
After a tape reaches its end during recording, the Monitor/ Recorder will rewind and eject the tape.

Playback Auto Eject
After a tape without a record tab* is played to its end, the Monitor/Recorder will rewind and then eject the tape.

Eject Cassette
A cassette may be ejected with power on or off.

Memory Rewind Off
When the Power button is pressed during rewind, rewind will be completed even though the Monitor/Recorder.

* For record tab information refer to page 23.

Timer Playback

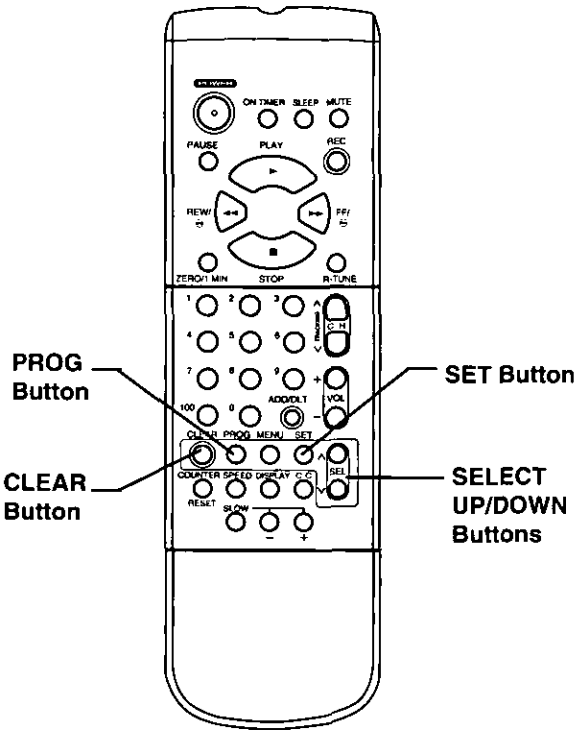
The Timer Playback feature lets you set the Monitor/Recorder from the remote control to do unattended playback.
For each program you set, the Monitor/Recorder will turn itself on at the scheduled time and do the playback, and turn off automatically.
Instructions for each step appear on the TV screen after you select the program mode.

Preparations:

- The clock is set to the correct time.
- Enter program selections within 5 minutes of each other or the Monitor/Recorder will automatically leave this mode.

You can program the timer to:

- playback a tape everyday, Monday to Saturday of each week, or Monday to Friday of each week, at the same time length (Daily Playback).
- playback a tape once a week at the same time, length and day of each week (Weekly Playback).



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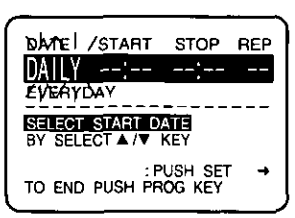
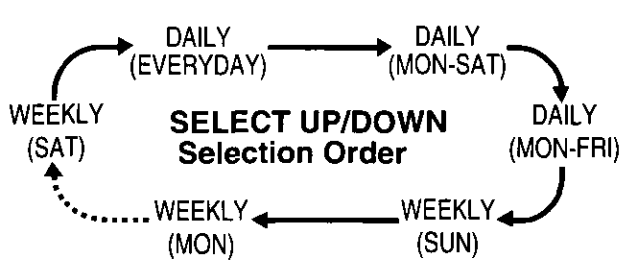
1 **Press the Prog button** on the remote control to display the program mode.
(If a program has already been set, the screen in step 5 will appear. Select a blank program number with the Set button.)

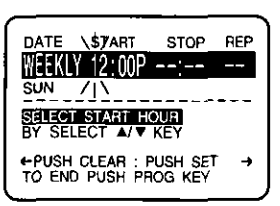


2 **Press the Select Up/Down buttons** to select a Start Date.

Example: Setting the Date

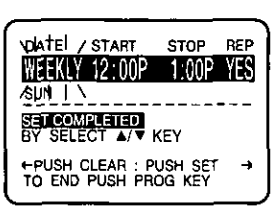


3 **Press the Set button** to lock in your entry and move on the next item.



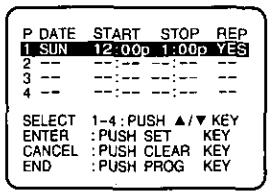
4 **Repeat steps 2 and 3** to set the each program item (start time, etc.) as it appears on-screen.

- To make corrections in on-screen entries, press the Clear button or the Set button to move the flashing indication one space to the left. Move this flashing indication over the numbers you want to change. Then enter the correct number.



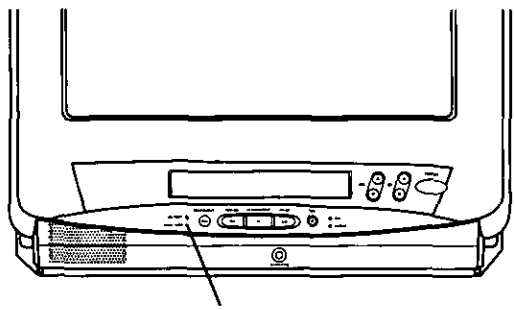
(Operation continued on the next page.)

5 **Press the Prog button** to first the program. "PROGRAM COMPLETED" will appear followed by this screen.



- If "PROGRAM IS INCOMPLETE" appears, check start and stop items and then re-enter.
- Select the next program by pressing the Select Up/Down and Set buttons, then, repeat steps 2-5.

6 **Press the Prog button** to exit the programming mode and set the timer.
- The Program Timer indicator lights on the front panel. If you turn the Monitor/Recorder off, the indicator will flash if there is no cassette in the Monitor/Recorder.



PROGRAM TIMER Indicator

Two minutes before the Timer Playback Starts:

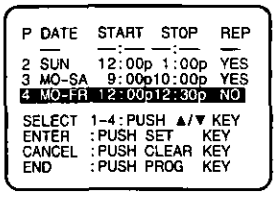
- "TIMER PLAY WILL START SOON" will appear on-screen. If "PLEASE PREPARE FOR TIMER PLAY" appears and/or the Program Timer Indicator flashes, check that a cassette is loaded and the Monitor/Recorder is in Stop mode.

Timer Playback (continued)

To Check or Re-Enter Timer Programs

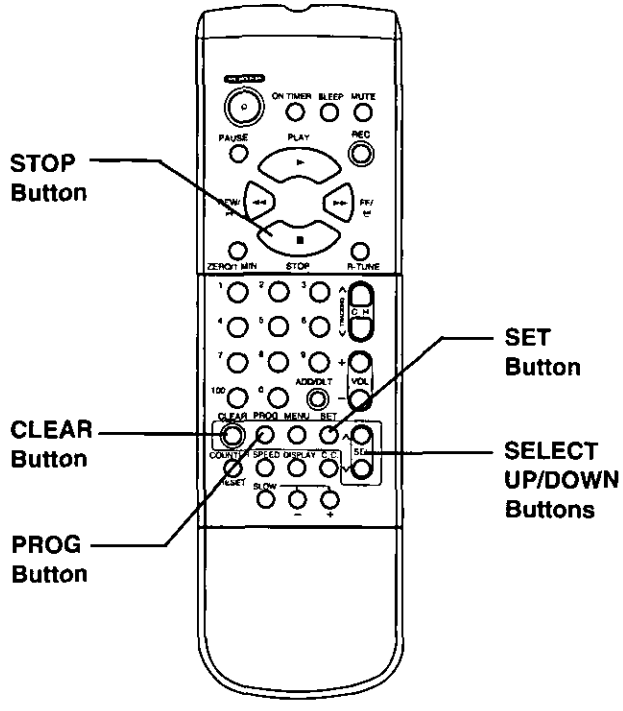
- After programming is complete.
- Recording is not progress.

1 **Press the Prog button** to display all currently set programs.


P DATE START STOP REP
2 SUN 12:00p 1:00p YES
3 MO-SA 9:00p10:00p YES
4 MO-FR 12:00p12:30p NO
SELECT 1-4:PUSH ▲/▼ KEY
ENTER :PUSH SET KEY
CANCEL :PUSH CLEAR KEY
END :PUSH PROG KEY

2 **Press the Select Up/Down and Set buttons** to select and enter the desired program. And check or re-enter the program contents.

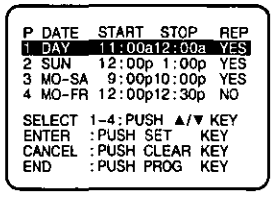
3 **Press the Prog button** to return to normal TV.



To Clear Programs

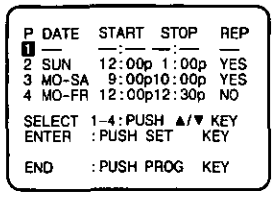
- After programming is complete.
- Recording is not progress.

1 **Press the Prog button** to display all programs.


P DATE START STOP REP
1 DAY 11:00a12:00a YES
2 SUN 12:00p 1:00p YES
3 MO-SA 9:00p10:00p YES
4 MO-FR 12:00p12:30p NO
SELECT 1-4:PUSH ▲/▼ KEY
ENTER :PUSH SET KEY
CANCEL :PUSH CLEAR KEY
END :PUSH PROG KEY

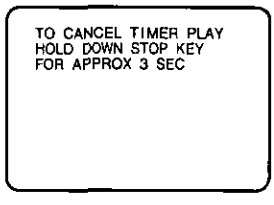
2 **Press the Select Up/Down and Set buttons** to select the program number you want to clear.

3 **Press the Clear button** to clear the program.


P DATE START STOP REP
1 —
2 SUN 12:00p 1:00p YES
3 MO-SA 9:00p10:00p YES
4 MO-FR 12:00p12:30p NO
SELECT 1-4:PUSH ▲/▼ KEY
ENTER :PUSH SET KEY
END :PUSH PROG KEY

To Stop a Timer Playback in Progress

Hold down the Stop button for a few seconds to cancel the Timer Playback.

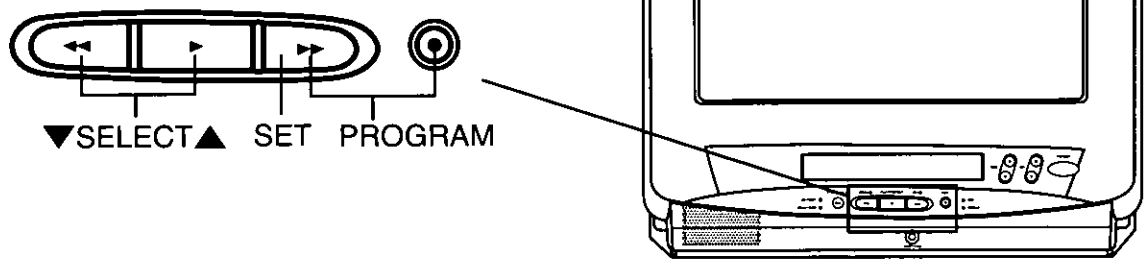


This erases the program in progress from the timer's memory, and cancels today's playback only of a daily or weekly series. Future daily and weekly playbacks will be performed as programmed.

Setting a Timer Playback at the Unit

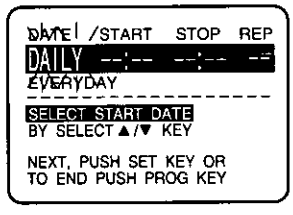
A timer playback can be set up using the buttons on the Monitor/Recorder. If necessary, the clock can also be set.

Monitor/Recorder Front Panel

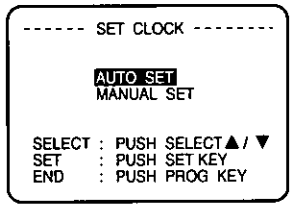


1 Hold down the Rec button and press the FF button to enter the program mode.

- Once the Monitor/Recorder is in the program mode, the Play, Rec, FF, and Rew buttons on the Monitor/Recorder are not functional.



- If the clock is not set, pressing these buttons (Rec and FF) will display the SET CLOCK screen. In this case, set the clock according to the OSD's instructions and then set a timer playback.

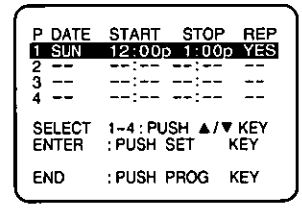


2 Press the Play button (for up) or the Rew button (for down) to make your selection.

3 Press the FF button to set and move on to the next item.

- To make corrections in on-screen entries, press the SET (FF) button to move the flashing indication once space to the left. Move this flashing indication over the numbers you want to change. Then enter the correct number.

4 When the program is completed, press the Rec and FF buttons at the same time to display all contents.

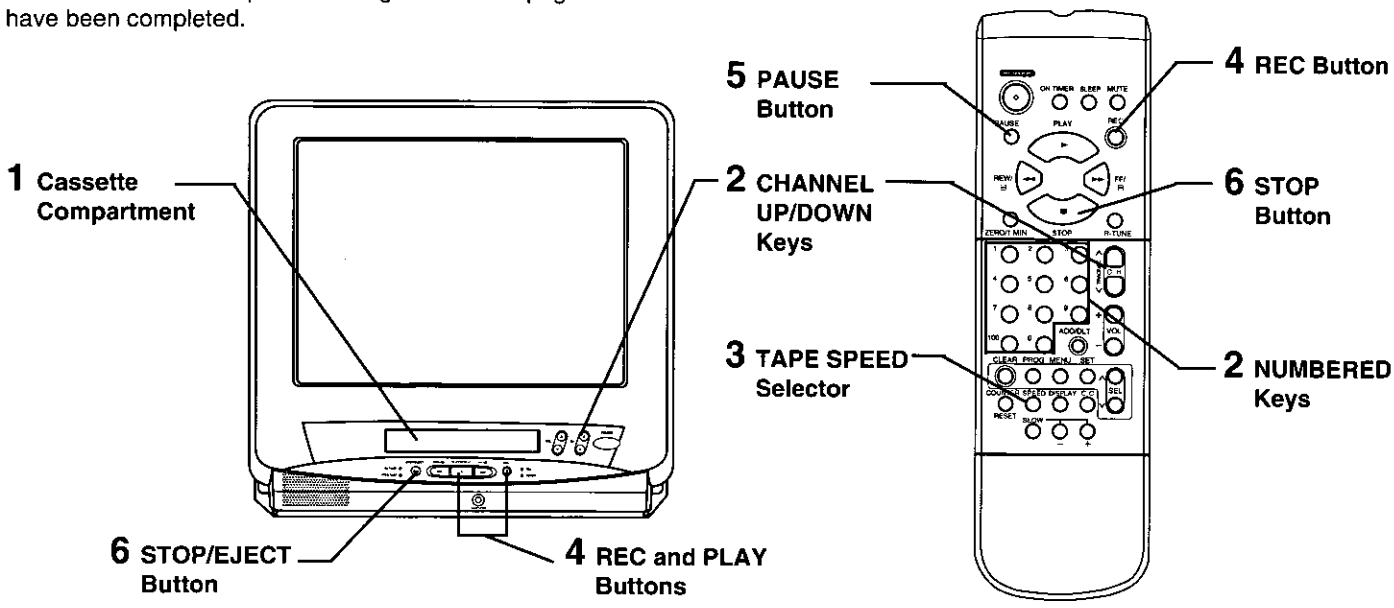


- Set the next program by repeating steps 2 and 3.
- It is not possible to clear a timer program using the Monitor/Recorder buttons. Please use the remote control.

5 Press the Rec and FF buttons at the same time to enter the program mode.

To Record

Preparation:
Make sure that the steps in "Getting Started" on page 4 have been completed.



1 Insert a cassette with the record tab in place.
The power will come on automatically. If the cassette is already in the Monitor/Recorder, just press the Power button.

2 Select a channel to be recorded using the Channel Up/Down or Numeric keys.
- To record from an outside source, see "Select the Input Mode" on this page.

3 Press the Tape Speed selector until the desired tape speed (SP, LP, SLP) appears on the screen.
- While it is possible to change the tape speed when you are recording, there will be some distortion on the tape where the change occurred.

4 Hold the Rec button in and press the Play button on the Monitor/Recorder. When using the remote control, just press the Rec button.

5 To pause the recording, **press the Pause button.**
To continue the recording, **press this button again.**
- After the Monitor/Recorder has been in Pause mode for 5 minutes, it will stop automatically to protect the tape and video head.

6 To end the recording, **press the Stop button.**

Important Notice to Owners of Monitor/Recorder Sets

While Viewing a program on one channel on the TV, you cannot record from a different channel on the VCR.

To Select the Input Mode

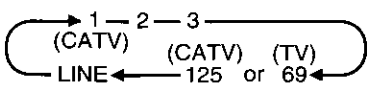
1 Press the Menu button to display the menu.

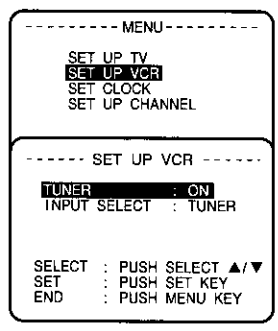
2 Press the Select Up/down and Set buttons to first, select the SET UP VCR from the menu and then, select the INPUT SELECT.
- If "INPUT SELECT" is not displayed, select "TUNER:ON" with the Set button.

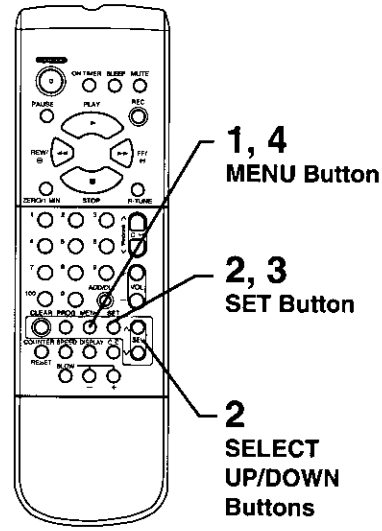
3 Press the Set button to select "TUNER" or "LINE."

4 Press the Menu button twice to exit this mode.

- You can also select LINE using the Channel Up/Down keys. The numbers will change in the order shown below.

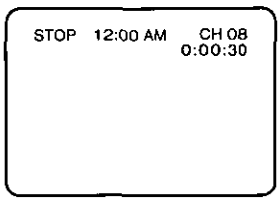




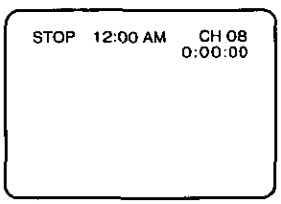


Zero Search

This feature allows you to search for the point on the tape at which the Time Counter was reset to 0:00:00.

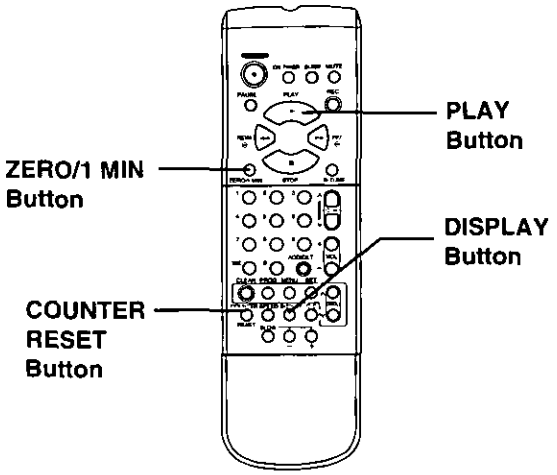


1 Press the Display button to display the Time Counter overlay.



2 Press the Counter Reset button to reset the Time Counter to 0:00:00 at whatever point you wish on the tape.

3 Press the Zero/1 Min button in the Stop mode.
The Monitor/Recorder will go into FF or Rewind mode. The tape will stop at the last point the Time Counter was set to 0:00:00.



One Minute Skip

This feature allows you to skip over commercials recorded on a tape.

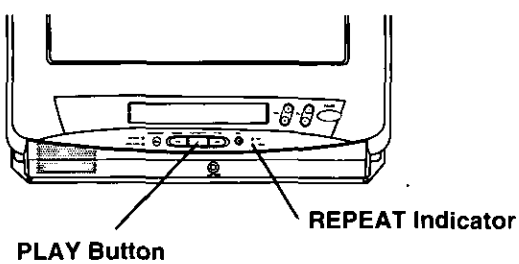
Press the Zero/1 Min button in Play mode.
The Monitor/Recorder will go into FF search mode and skip over 60 seconds of recorded time. Then, normal playback will resume.

Auto Play with Repeat Function

From Playback mode you can set the Monitor/Recorder to play your recording over and over.

1 Press the Play button on the Monitor/Recorder, or remote control during playback. The REPEAT Indicator lights.
- When Repeat Play is turned on, the Monitor/Recorder will play to the end of a tape, or until it reaches a blank portion 30 seconds or more. (Erased portions of tape are not considered blank.) Then, the Monitor/Recorder will automatically rewind the tape and play it again and again until you cancel Repeat Play.

2 Press the Play button once again to turn the repeat function off. The REPEAT Indicator goes out.



- All function buttons (Rew, FF, etc.) are operational during Repeat Play.
- If cassette has no record tab, the Monitor/Recorder will automatically go into Repeat Play mode when the REPEAT indicator is lit.

Types of Video Cassettes

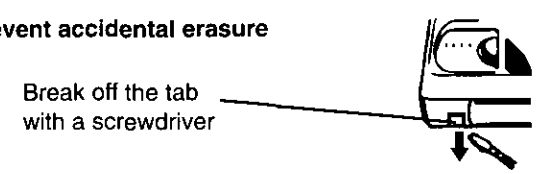
Only use tapes with the VHS mark in this unit.

Tape Speed Selector Position	Maximum Record/Playback Time		
	T160	T120	T60
SP (Standard Play)	2 Hours 40 Minutes	2 Hours	1 Hours
LP (Long Play)	5 Hours 20 Minutes	4 Hours	2 Hours
SLP (Super Long Play)	8 Hours	6 Hours	3 Hours

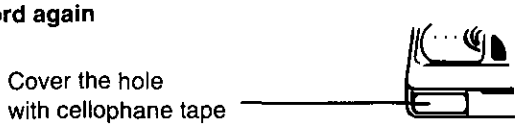
Erase Protection (Record Tab)

Cassettes have a record tab to ensure that recordings are not accidentally erased.

To prevent accidental erasure



To record again



Cleaning Care for Video Heads

Clogged Video Head

Video Head Cleaning:
Your Monitor/Recorder will not normally require head cleaning; however, it is possible that the heads may become clogged when playing an old or damaged tape. If the image on your screen resembles the photograph here during playback, the heads may require cleaning.
It is recommended that the cleaning be done by a qualified technician.

Re-Recording (Tape Duplication)

Dubbing from any VHS recorder (or camcorder) to another is simple and can be done using the connections and steps shown below.

1 **Insert a pre-recorded tape into the Playing (Source) VCR.**

2 **Insert a blank tape with record tab** into the Recording (Editing) Monitor/Recorder.

3 **Select the "LINE"** as the input on the Recording (Editing) Monitor/Recorder.
- If you are using this Monitor/Recorder as the Recording (Editing) unit, see "Selecting the Input Mode" section on page 22.

4 **Press the Play button on the Playing (Source) VCR.**

When the reduces the point at which you want to start dubbing, **press the Pause button** on the remote.

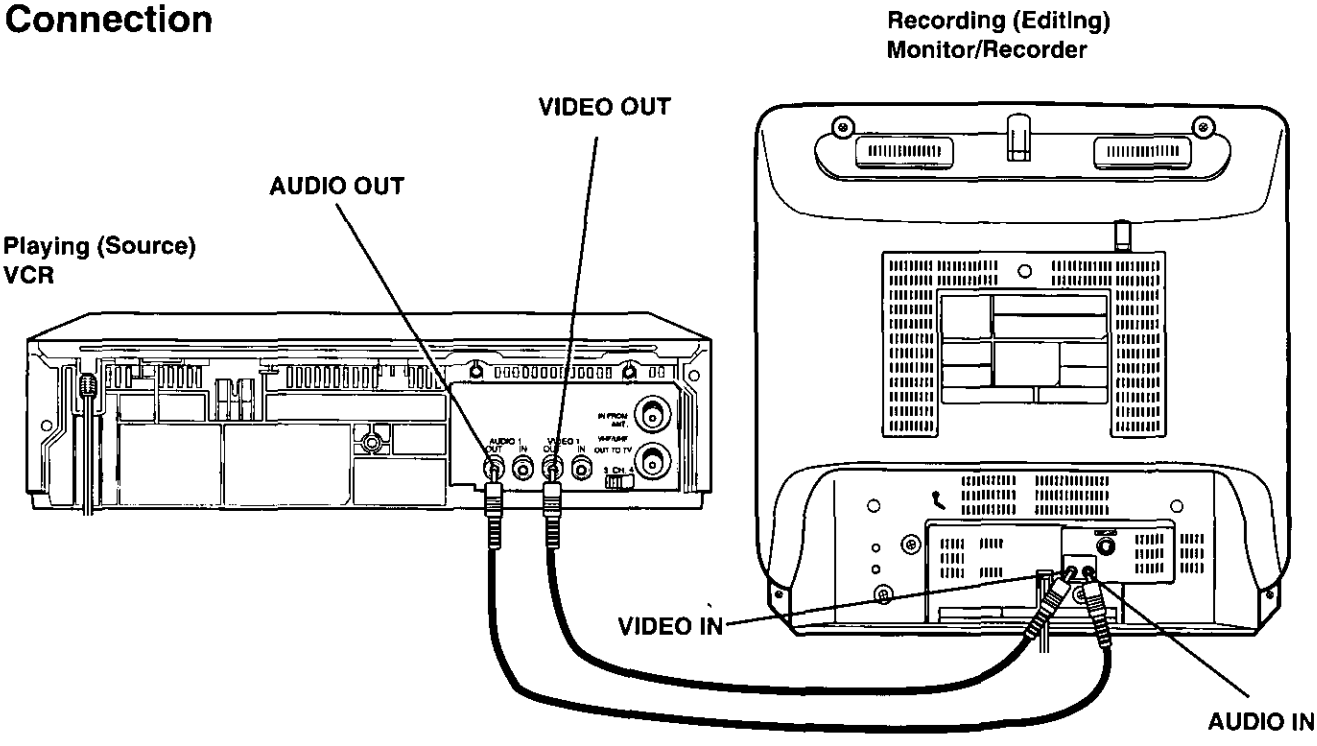
5 **Press the Rec and Play buttons together on the Recording (Editing) Monitor/Recorder** and then, **immediately press the Pause/button** on the remote.

6 **Press the Pause buttons on both units (at the same time)** to begin re-recording.

7 **Press the Stop button on both units** to stop re-recording.

Caution:
Unauthorized exchanging and/or copying of copyrighted recordings may be copyright infringement.

Connection



Getting Started

- With cable connections, numbers selected to receive specific channels may differ from those for antenna connections. Refer to your cable service information.

Clock Adjustment

- Make entries within 5 minutes of the appearance of the clock set guide. Otherwise, the program you were watching will return to the screen. If this happens, press the Menu button and start again.
- The letters for day of the week will automatically appear when you have entered both digits for the year.
- If you press the Menu button while the clock set guide appears, the TV screen will return to the program you were watching.

Special Playback Features

- During search playback, horizontal noise bars will appear on the TV screen.
- After the Monitor/Recorder is in the still or slow mode for 3 minutes it will stop automatically to protect the tape and video head.
- The special effects playback feature is intended for tapes recorded in SP or SLP speed. Tapes recorded in LP mode can also be viewed in special effects playback, but the picture may be completely snowy.

To Record

- While it is possible to change the tape speed when you are recording, there will be some distortion on the tape where the change occurred.
- After the Monitor/Recorder has been in pause for 5 minutes it will stop automatically to protect the tape and video head.
- The cassette will eject automatically if its record tab is missing when you press the Rec button.

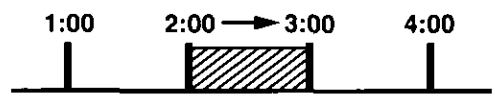
Timer Playback

- Timer playback may not be performed or continue if a power interruption of more than about 1 minute occurs before or during timer playback, even if power resumes thereafter.
- If the start times of 2 preset programs overlap, the preset time of the lower numbered program will have priority.
- If the preset time for a timer playback comes up during a normal playback, the timer playback will not be performed.

D. S. T . (Daylight Saving Time)

Spring

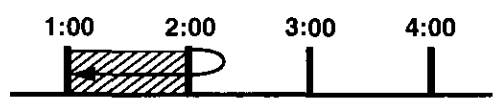
First Sunday in April (ahead 1 hour)
Because the clock automatically changes from 2AM to 3AM, keep in mind that any part of a scheduled timer playback which falls between these two times will not be performed.



Examples:
A playback set to begin at 1:30AM and end at 2:30 will actually play for 30 minutes.
A playback set to begin at 1:30AM and end at 3:30 will actually play for 1 hour, and so on.

Autumn

Last Sunday in October (back 1 hour)
The clock automatically changes from 2:00AM back to 1:00AM and therefore affects your playback length.



Examples:
A playback set from 12:50AM to 2:30, will actually play for 2 hours and 40 minutes.
A playback set from 1:00AM to 1:30, will actually play for 30 minutes. (Not affected.)
A playback set from 1:30AM to 2:30, will actually play from 1:30 to 2:00 and then go into the Stop mode until it becomes 1:30 again. The playback will then continue until 2:30 for a total playback time of 1 hour and 30 minutes.

- Even if one timer playback of a daily or weekly series is affected, other playback segments of the series will be performed as programmed.

Before Requesting Service

Check the following points once again if you are having some trouble with your Monitor/Recorder.

Power	Correction
No power...	Check that the Power Plug is completely connected to an AC outlet. Check that the Power button is set to on.
Monitor	**Correction**
	At first, check antenna - its wires, connections, and direction. Then follow the corrections below.
No picture or sound...	Check that the power plug is completely connected to an AC outlet. Check that the Power button is set to on.
Poor picture with normal sound...	Adjust the Bright, Sharpness, and Picture controls. (P.15)
Poor sound with normal picture...	Adjust the Volume control. (P.5, 7)
Poor TV reception...	Adjust the Sharpness and Picture controls. (P.15)
No color or poor color...	Adjust the Tint and Color controls. (P.15)
Ghosts (Multiple images)...	Install a directional antenna.
TV programs can't be watched...	Make sure that the receiving channel of the Monitor/Recorder is memorized. (P.8)
VCR	**Correction**
TV program can't be recorded...	Check that the band selected is set to meet your antenna or cable TV system. (P.10) Make sure that the record tab on the back of the cassette is still intact. (P.23)
Timer playback can't be performed...	Set the Playback start/stop time correctly. (P.18-19) Timer playback may not be performed or continued if a power interruption of more than 1 minute occurs before or during Timer Playback, even if power resumes thereafter.
There's no playback picture or the playback picture is noisy or contains streaks...	Adjust the Tracking control slowly in either direction. (P.17)
Remote Control	**Correction**
Monitor/Recorder can't be remote controlled...	Aim the Remote Control directly at the remote sensor on the Monitor/Recorder. (P.5) Avoid all obstacles which may interfere with the signal path. Inspect or replace the batteries. (P.2)
Miscellaneous	**Correction**
Video cassette can't be inserted...	Insert the cassette with the window side up and the record tab facing you.
Video cassette can't be removed...	Check that the power plug is completely connected to an AC outlet.
Eject does not function or insertion cannot be done...	Turn the Power off and then on, and try ejecting or inserting the tape again.
Video cassette ejects when the Rec and Play buttons are pressed on...	Check the cassette to be sure that the record tab on the back of the cassette is still intact. (P.23)
In the stop mode, the motor (CYLINDER) continues to rotate...	To enable quick play mechanism the cylinder will rotate for about 5 minutes. The quick play mechanism reduces response time from Stop to Play mode and from Play to Rewind search mode.

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Specifications

Display

Picture Tube:	20 inch measured diagonal 90° deflection Picture Tube

VCR

Video Recording System:	4 rotary heads helical scanning system
Audio Track:	1 track
Tuner:	
Broadcast Channels:	VHF 2~13, UHF 14~69
CATV Channels:	Midband A through I (14~22) Superband J through W (23~36) Hyperband AA~EEE (37~64) Lowband A-5~A~1 (95~99) Special CATV channel 5A (01) Ultraband 65~94, 100~125

General

Power Source:	120V AC, 60 Hz
Power Consumption:	Approx. 110 watts
Television System:	EIA Standard NTSC color
Speaker:	1 piece
Operating Temperature:	41°F~104°F (5°C~40°C)
Operating Humidity:	10%~75%
Weight:	54 lbs. (24.5 Kg)
Dimensions:	21-1/8" (W) X 21-3/16" (H) X 18-7/8" (D) 536 (W) X 538 (H) X 479 (D) mm

Designs and specifications are subject to change without notice.

Panasonic

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Atlanta Region: 1854 Shackleford Ct., Suite 115, Norcross, GA 30093 (404) 925-6841

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